Appetite 95 (2015) 484–491

Contents lists available at ScienceDirect

Appetite

journal homepage: www.elsevier.com/locate/appet

Intergenerational differences in beliefs about healthy eating among carers of left-behind children in rural China: A qualitative study

Nan Zhang [a, *], Laia Bécares [b], Tarani Chandola [b], Peter Callery [a]

[a] The School of Nursing, Midwifery and Social Work, The University of Manchester, Manchester, M13 9PL, UK
[b] Cathie Marsh Institute for Social Research (CMIST), School of Social Sciences, The University of Manchester, Manchester, M13 9PL, UK

ARTICLE INFO

Article history:
Received 28 April 2015
Received in revised form
11 August 2015
Accepted 18 August 2015
Available online 20 August 2015

Keywords:
Healthy eating
Left-behind children
Malnutrition
China
The Great Famine

ABSTRACT

China's internal migration has left 61 million rural children living apart from parents and usually being cared for by grandparents. This study aims to explore caregivers' beliefs about healthy eating for left-behind children (LBC) in rural China. Twenty-six children aged 6–12 (21 LBC and 5 non-LBC) and 32 caregivers (21 grandparents, 9 mothers, and 2 uncles/aunts) were recruited in one township in rural China. Children were encouraged to keep food diaries followed by in-depth interviews with caregivers. Distinct intergenerational differences in beliefs about healthy eating emerged: the grandparent generation was concerned about not having enough food and tended to emphasise the importance of starchy foods for children's growth, due to their past experiences during the Great Famine. On the other hand, the parent generation was concerned about food safety and paid more attention to protein-source foods including meat, eggs and milk. Parents appeared to offer children high-energy food, which was viewed as a sign of economic status, rather than as part of a balanced diet. Lack of remittances from migrant parents may compromise LBC's food choices. These findings suggest the potential for LBC left in the care of grandparents, especially with experience of the Great Famine, may be at greater risk of malnutrition than children cared for by parents. By gaining an in-depth understanding of intergenerational differences in healthy eating beliefs for children, our findings could inform for the development of nutrition-related policies and interventions for LBC in rural China.

1. Introduction

Eating habits developed during childhood can persist into adolescence and adulthood, influencing individual growth, development, and health in later life (Centres for Diseases Control and Prevention, 1997; Nicklas & Johnson, 2004). For children, their eating decisions are often made within the family context, which is the most influential aspect of the immediate social context (Jiang et al., 2007; Nicklas, 1995; Taylor, Evers, & McKenna, 2005). The family eating circumstances that caregivers provide during early childhood, including their feeding practices, their own eating patterns, and their beliefs and attitudes about healthy eating can directly (through food served) and indirectly (through offering behavioural models) influence and shape children's eating habits (Cooke et al., 2004; Gibson, Wardle, & Watts, 1998).

Household living arrangements are an important feature of family circumstances that contributes to the formation of children's eating practices (Deng, 2011; Hasenboehler, Munsch, Meyer, Kappler, & Vögele, 2009). Kinship care of children, especially by grandparents, is a common arrangement in developing countries (Ma, 2010). Grandparents therefore play a key childcare role in multigenerational and 'skipped generation' (children living in households headed by their grandparents) households (Burnette, Sun, & Sun, 2013). Being cared for by family members other than parents may take a toll on child development. For example, one qualitative study drawing on in-depth interviews with 12 parents and 11 grandparents in Beijing urban areas suggested that young children aged 3–6 years and cared for by grandparents tended to develop unhealthy eating habits (eating more meals and snacks than necessary) (Jiang et al., 2007). A study using the China Health and Nutrition Survey 2006 showed that adolescents living in extended families, where children live with their parents and

Abbreviations: LBC, left-behind children; Non-LBC, non-left-behind children; RMB, Renminbi (the official currency of People's Republic of China); GBP, Pound Sterling.

* Corresponding author.
E-mail addresses: nancytju@gmail.com (N. Zhang), laia.becares@manchester.ac.uk (L. Bécares), tarani.chandola@manchester.ac.uk (T. Chandola), peter.callery@mancester.ac.uk (P. Callery).

http://dx.doi.org/10.1016/j.appet.2015.08.024

grandparents were more likely to develop unhealthy food preferences (e.g., preference for fast food, salted snack food and sugared drinks, and less liking for vegetables and fruits) compared to those living in nuclear families (Deng, 2011). These intergenerational differences in forming eating habits may be due to differences in generations across a range of socio-economic variables, for example, educational attainment, economic status and early life experiences involving food (Jing, 2000; Taylor et al., 2005).

Contemporary China has been undergoing unprecedented rural-to-urban migration, which has tremendously altered household living arrangements. Around 61 million children (accounting for 37.7% of total rural children and 21.9% of all children in China) live apart from either one or both parents. About one fourth (24.5%) of left-behind children (LBC) share a household with a parent and grandparents, while one third (32.7%) live with grandparents only (All-China Women's Federation, 2013). LBC cared for by grandparents in rural China tend to be subject to potential nutritional problems. For example, a large survey conducted in the rural areas of seven Chinese provinces showed that non-parent caregivers had relatively poorer nutrition knowledge regarding the intake of certain nutrients (e.g., animal-source foods, flour, milk, fried food, etc.) than parent caregivers of non-LBC (Tan et al., 2010). Another survey using a sample of LBC and non-LBC from 10 rural communities in 5 provinces across mid-south China showed that grandparents tended to pay less attention to children's diets and were unable to provide meals for LBC on time during farming seasons (Ye & Pan, 2011). Although these results suggest that LBC are prone to unhealthy eating, they fail to provide in-depth information about how caregivers understand and manage eating practices for LBC. We argue that intergenerational differences in beliefs about dietary-related behaviours and nutritional intakes, the focus of this work, may put children at different risks for nutritional deficiencies.

The aim of the present study was to explore caregivers' beliefs about healthy eating for LBC in rural China. A qualitative study design was used to provide rich and in-depth information about the complex phenomenon of feeding practices and eating behaviours among children and their caregivers, and to advance an understanding of social and behavioural aspects of food and eating (Bisogni, Jastran, Seligson, & Thompson, 2012). We employed a social constructionist approach that viewed people as active agents who shape and create meanings and understandings within certain social, cultural and historical contexts (Charmaz, 2006; Creswell, 2006; Ritzer & Goodman, 2003). This perspective recognises that people construct subjective and complex meaning pertaining to food, eating and nutrition through their personal experiences and interactions with other people and their environments. Understanding of caregivers' perspectives and experiences related to healthy eating could inform the development of nutrition-related polices and interventions for children in rural China.

2. Methods

2.1. Setting

This study was conducted from September 2013 to February 2014 in a rural township in Henan Province, the most populous and traditionally one of the largest migration-sending central areas of the People's Republic of China (All-China Women's Federation, 2008, 2013). The annual per capita disposable income of urban residents in 2012 was 19,408 RMB (or 1940 GBP) and 7432 RMB (740 GBP) for rural residents (Yongcheng Government, 2013), which is lower than the national average (24,565 RMB or 2450 GBP for urban residents and 7917 RMB or 790 GBP for rural residents) (National Bureau of Statistics of China, 2014).

The agricultural township has a population of 55,000 (Han Chinese) and includes 30 villages under its administrative jurisdiction. Child participants were recruited from a rural primary school. Children who participated in this study were from 7 villages that are geographically close. To be eligible, LBC had to have at least one migrant parent living away for employment reasons. Non-LBC had to be children with both parents currently living at home. Both LBC and non-LBC were aged over 6 years old because this is the normal youngest age of commencement of primary education in China (Shah, Zhang, & Zou, 2005), and an age at which children have the cognitive and language capabilities to be interviewed (Docherty & Sandelowski, 1999; Rich, 1968; Yarrow, 1960). Children as young as 6 years old can demonstrate a basic understanding of the purposes of research and what is expected of them during the research process (Broome, 1999). The caregivers for eligible children were invited to take part. The sample was purposive in order to achieve maximum variation (Creswell, 2006) of age, gender, and family structures (left behind by mother, father, or both parents). The sample size was not fixed until saturation occurred (Corbin & Strauss, 2007), which was defined as 'data adequacy', meaning that recruitment stopped when no new information was obtained from additional participants (Morse, 1995).

2.2. Ethics

Ethical approval was obtained from the University of Manchester Research Ethics Committee. Child participants were included after gaining informed consent from their caregivers, as well as their own assent, either in writing or by verbal audio-recording from illiterate participants. Pseudonyms have been used to preserve participants' anonymity.

2.3. Data collection

Face-to-face semi-structured interviews were conducted with caregivers, either individually or together with their partners, and their children. Prior to interviews, children were encouraged to keep diaries about their daily eating (i.e., breakfast, lunch, supper and snacks) and activities (physical activities, school work, household work, etc.) for around one week. Diaries were used to establish rapport with children and their caregivers, and as a starting point for discussions between participants and the researcher (Spratling, Coke, & Minick, 2012). In addition, the diaries were used to facilitate discussions in further interviews with caregivers and to check consistencies and inconsistencies in caregivers' interview accounts regarding children's diets.

Children were provided with pens and interesting and user-friendly notebooks, which may have rendered the children more predisposed to completing the diaries (Tinson, 2009). The first author explained to the children how to complete the diaries using plain language and encouraged them to ask questions and/or air any concerns. She asked caregivers to encourage their children to complete the diaries, but not to influence their content. In addition, the first author visited the school twice a week to remind and encourage children to continue completing their diaries.

The interviews took the form of informal conversations in which the interviewer asked open questions about children's food and diet using a topic guide. The topic guide contained open-ended questions designed to elicit caregivers' understanding of healthy eating for children, as well as the related feeding practices (e.g., food preparation, meal places, meal time, etc.) for children under their care. The primary questions included:

1. *What do you think of healthy eating/eating well for children?* Probes included questions such as *can you name some food items that you think are healthy* and *why you think they are healthy*; and

2. *How do you manage the food for children you are looking after?* Probes included food preparation, meal places and meal time.

Caregivers were encouraged to elaborate on their answers and to raise additional topics that they considered relevant. Interviews were conducted in Chinese (Mandarin or dialect). Each interview lasted approximately between 1 and 1.5 h. All interviews were conducted by the first author in the participants' homes and were audio-recorded with their permission, and subsequently transcribed verbatim in Chinese by a different person outside the research team. The first author checked all the Chinese transcripts to minimise data loss.

2.4. Data analysis

There were two sources of data: children's diaries and interviews. The primary data source was interviews with caregivers and children. Children's diaries were not designed to collect reliable data about precise consumption but used principally to build rapport with participants and facilitate further interviews. However, they provided an overall picture of children's daily eating and were also compared with caregivers' accounts concerning children's diets during interviews. The food items and frequency of consumption were summarised to explore consistencies and inconsistencies between the food items that children mentioned in their diaries and caregivers' stated views about healthy food. As children's reports in diaries were consistent with interview accounts, the data were included in this paper to provide additional detail and context.

Principles and procedures of the constant comparative methods guided data analysis (Charmaz, 2006), following transcription and entry into the qualitative analysis computer program Nvivo 10 (QSR., 2012). Concurrent data collection and data analysis occurred with codes and categories being inductively developed from the data. Analysis involved identifying codes and their properties and dimensions, grouping these codes to create categories, systematically comparing and contrasting the codes and examining the connections between the categories and subcategories.

Data analyses were initially conducted in Chinese in order to avoid misunderstanding and to minimise the risk of losing participants' original meanings. Each transcript was read through carefully several times so that the first author could familiarise herself with the data. During this process, recurring themes were noted as part of the initial coding process. During the second stage, the first author re-read and coded each transcript line-by-line within the Nvivo software package. Data were fractured into segments and distinct codes. During this process, joint meetings were scheduled with co-authors to review the coding, discuss possible meanings and achieve consensus on categorisation and interpretation. Data related to emerging themes were translated into English to facilitate review and discussion with co-authors. The translated versions and the original Chinese versions were checked by an independent and bilingual person outside the research team. Then, relationships between categories were linked on a conceptual level rather than on a descriptive level, concerning conditions, context, action/interactions and consequences (Corbin & Strauss, 2007). Once all interviews had been individually analysed, the identified themes were integrated with subsequent comparative analysis.

3. Results

3.1. Socio-demographic characteristics

Twenty-six children aged between 6 and 12 years old were recruited (Table 1): 21 LBC (12 boys and 9 girls) and 5 non-LBC (3 boys and 2 girls); 12 of 21 LBC had been left behind by both parents, 3 had been left behind only by the mother, and 6 had been left behind only by the father. Twenty-four (92%) of the children kept diaries. Table 2 presents the characteristics of the caregivers. Of the 21 grandparents (17 on the paternal side and 4 on the maternal side), 15 were aged over 60 years old, and 6 were aged over 70. Only two of them attended primary school and the rest had never attended to school. The other caregivers (8 mothers, 1 aunt and 1 uncle, defined as the parent generation) had up to a middle school education.

3.2. Intergenerational differences in healthy eating beliefs

'Healthy eating' and 'eating well' were broadly interpreted by participants and were used interchangeably during the interviews. Caregivers illustrated individual food items that were believed to be 'good for children' when asked about what they thought as eating well/healthy (Table 3). The grandparent generation emphasised the importance of home-grown foods, such as starchy foods and vegetables (although sometimes bought from the local markets). For the parent generation, the foods that were most valued were animal products from local markets, which were described as associated with household economic status.

There were distinct differences in expectations and concerns regarding food between these two generations. The grandparent

Table 1
Sample sizes and characteristic of left-behind children and non-left-behind children (N = 26).

	Left-behind children		Non-left-behind children		Total
	Aged 6–9 years	Aged 10–12 years	Aged 6–9 years	Aged 10–12 years	
Gender					
Boy	4	8	0	3	**15**
Girl	5	4	1	1	**11**
Left-behind type					
Only mother away	1	2	–	–	**3**
Only father away	3	3	–	–	**6**
Both parents away	5	7	–	–	**12**
Cared for by					
Parent generation	1	4	1	4	**10**
Grandparent generation	6	5	–	–	**9**
Both grandparents and parent generation	2	3	–	–	**5**
Number of children keeping diary					
Yes	9	10	1	4	**24**
No	–	2	–	–	**2**
Total	**9**	**12**	**1**	**4**	**26**

Table 2
Sample sizes and characteristics of caregivers (N = 32).

Characteristics	Paternal grandmother	Paternal grandfather	Maternal grandmother	Maternal grandfather	Mother	Aunt/Uncle	Total
Age range (years)							
30–39	–	–	–	–	5	1	**6**
40–49	–	–	–	–	4	1	**5**
50–59	6	–	–	–	–	–	**6**
60–69	5	3	1	–	–	–	**9**
>=70	1	2	2	1	–	–	**6**
Educational attainment							
Illiterate	11	5	2	1	1	–	**20**
Primary school	1	–	1	–	2	1	**5**
Middle school	–	–	–	–	6	1	**7**
High school or higher	–	–	–	–	–	–	–
Number of children cared							
1	1	1	1	–	1	–	**4**
2	9	2	1	–	7	1	**20**
3	1	1	–	–	1	–	**3**
4	1	1	1	1	–	1	**5**
Total	**12**	**5**	**3**	**1**	**9**	**2**	**32**

generation expected food as a means for avoiding hunger and they viewed meat as a special treat for special occasions, while the parent generation viewed food, especially meat, as a sign of economic status within their communities. Grandparents tended to be concerned about having enough food for the children they cared for, while the parent generation paid more attention to food safety and tended to express concerns about the lack of access to fresh milk for their children growing up in rural areas, compared to children growing up in urban areas.

Food items and frequency of consumption, as noted in children's diaries, were grouped into three categories based on children's living arrangements (Table 4). Table 4 presented as contextual data for interpretation of caregivers' interview accounts regarding children's daily eating. Food items reported in children's food diaries were broadly consistent with the descriptions in the interviews with caregivers. There were no distinct differences in the consumption of starchy foods and vegetables between children left in the care of the grandparent and parent generations. Protein-source foods including animal products, eggs and milk were mentioned more often for each meal among children left in the care of the parent generation, compared to children who were cared for by the grandparent generation.

3.3. Grandparent generation

The food items most frequently mentioned by grandparents as 'good for children' (in order of frequency) were steamed buns, noodles, meat, rice and eggs. According to grandparents, starchy foods were more important than other food groups for children's growth (Table 3). Starchy/staple foods are an essential part of Chinese dietary culture, which can include wheat and wheat products, rice and rice products, and foods of other grains (Newman, 2004). One paternal grandfather of a 10-year-old left behind boy believed that starchy foods could help children grow 'taller and bulkier':

> He is too thin for his age. We try our best to let him eat more staple food, like steamed buns and noodles. One of his playmates in this village can eat a couple of bowls of noodles at a time. So he is quite bulky. How could you possibly become taller and stronger without staple food? (paternal grandfather 5, LBC)

Similarly, one grandmother of a six-year-old left-behind girl believed that the intake of starchy foods was essential for meeting children's nutritional needs. She illustrated this by comparing her two grandchildren:

> She [left-behind girl] is not as tall and strong as her little brother. She is quite fussy about the food. She does not like steamed buns, rice and sweet potatoes. At least her little brother eats steamed buns. How can her nutritional needs be possibly met? (paternal grandmother 6, LBC)

Four grandparents spontaneously referred to their past experiences during the Great Famine when asked about 'good food for

Table 3
Caregivers' beliefs about healthy food for children and expectations concerning food (N = 32).

Caregivers	The grandparent generation (N = 21)	The parent generation (N = 11)
Beliefs about healthy foodstuffs	• Starchy foods: steamed buns, noodles, porridge, sweet potatoes, potatoes, rice • Animal source food: meat • Vegetables: spinach • Eggs • Dumplings (a mixture of vegetables and/or meat or egg with wheat flour)	• Starchy foods • Animal source food: meat, chicken, duck, lean meat • Fresh vegetables • Dumplings • Eggs • Milk
Expectations of food	• To avoid hunger • Meat as a special treat for special occasions • Access to calories: primarily starchy foods • Home-grown food	• To demonstrate economic status within the community • Regular access to meat and other animal products • Food bought from local markets
Concerns about food	• Not having enough food for children • Based on grandparents' past experience during the Great Famine	• Food safety • Lack of access to fresh milk and fresh vegetables (in winter) • Based on comparisons with urban children

Table 4
Food items from children's diaries (N = 24).

Children	Food groups	Food items		
		Breakfast	Lunch	Supper
Care for by parent generation (n = 10: 5 LBC, 5 non-LBC)	Starchy foods	Porridge, noodles, dumpling (2), sweet potato, instant noodles	Noodles, steamed rice, fried noodle, dumpling (1), sweet potato, steamed bun, instant noodle	Steamed rice, noodle, fried noodles, sweet potato, steamed bun
	Vegetables	Beans, pumpkin, radish	Bean sprouts, Chinese melon, mushroom, Chinese cabbages, potato	Beans, mushroom, bean sprouts, Chinese cabbage, radish
	Animal source		Pork (2), chicken (2), fish (2), sausage (1)	Sausage (1), chicken (1), beef (1)
	Eggs	Egg soup (4), fried egg (1)	Fried egg (1), egg (1), egg soup (1)	Egg (1), egg soup (2), fried egg (1)
	Milk	Milk (2), soybean milk (2)	Milk (2), soybean milk (2)	
Cared for by grandparent generation (n = 9)	Starchy foods	Porridge, steamed bun, rice, dumpling (2), instant noodles	Noodles, porridge, steamed rice, sweet potato, dumpling (1)	Porridge, noodles, steamed rice, stuffed bun
	Vegetables	Onion, bean curd, bean sprouts, pumpkin	Bean sprouts, pumpkin, Chinese melon, Chinese cabbage, potato	Pumpkin, Chinese melon, lotus roots, potato, towel gourd, Chinese cabbage
	Animal source	Pork (1)	Pork (2)	Chicken (1), chicken feet (1)
	Eggs	Egg soup (1)	Egg soup (1), fried egg (1)	Egg soup (1)
	Milk	–	–	–
Cared for by parent and grandparent generation (n = 5)	Starchy food	Instant noodles, watery rice, steamed bun, rice, dumpling (1)	Fried noodle, steamed rice	Watery rice, rice, noodle
	Vegetables		Potato, Chinese melon	Pumpkins
	Animal source		Pork (1)	Chicken (1), pork (1), fish (1)
	Eggs	Egg soup (1)		Fried egg (1)
	Milk	–	–	–

Note. LBC: left-behind children; non-LBC: non-left-behind children; the number of children who mentioned one particular food item in his/her food diary is included in brackets.

children'. The Great Famine took place in China from 1959 to 1961, leading to 30 million deaths (Ashton, Hill, Piazza, & Zeitz, 1984; Smil, 1999). The province where this study was conducted experienced a severe reduction (around 40% in 1961 compared to that of 1960) in grain, which was an essential part of the Chinese diet at the time (Peng, 1987). The experience of starvation during their (child participants) grandparents' early years of life appeared to have shaped their values about food, which in turn may have influenced their feeding practices. One paternal grandfather mentioned that his left-behind grandson constantly complained that 'the food was not nice' and 'we have noodles all day'. The grandfather argued for the importance of starchy foods and believed that modern food was much better than before:

> Modern people eat way better than before [the Great Famine]. Nowadays they have very nice steamed buns. But steamed buns alone are not good enough for them. They want more, such as delicious dishes. But you know in the old days, we did not even have salt. We were so hungry then that we had to steal wheat sprouts to feed our empty stomachs. (paternal grandfather 4, LBC)

Steamed buns were the food item most frequently described by grandparents as 'good for children.' They were considered to be 'nice' from the grandparents' point of view, as they were rarely available during the Great Famine:

> When seeing others have nice steamed buns [during the Great Famine], I was wondering when I could possibly have one of my own. You know in the old days, even high-ranking officials had no access to nice steamed buns and dishes like there are today. I tried my best to live one more day just for one more steamed bun. (paternal grandmother 8, LBC)

One key reason why grandparents emphasised the value of starchy foods was that it could prevent feelings of hunger:

> Even watery rice was not available at all during the Great Famine. It was all about water-boiled edible wild herbs in the communal kitchens. How could you not be hungry by only eating this? (paternal grandmother 10, LBC)

Most of our grandparent participants (15 out of 21 aged over 60 years old) experienced the Great Famine which was a period of severe food shortage and food consumption was a matter of survival. Grandparents argued for the value of staple or starchy foods regarding children's growth and persuaded their grandchildren to consume more of these items, placing a special value on one specific food that was often associated with limited access and/or survival (Kumanyika, 2008). Starchy foods in our study were given greater emphasis by the grandparent generation, compared to other foods. The value given to these foods appeared to persist throughout their lives, even after they become widely accessible and abundant.

Meat was one of the most frequently mentioned foods by grandparents as 'good for children', after starchy foods. Seven grandparents directly referred to meat (mainly pork). The key issue was affordability, especially for those LBC who received little remittances from their migrant parents. Therefore, meat was provided occasionally and seen as a special treat:

> We are unable to afford meat and eggs every day. I cook meat every ten days or so. I mince the meat into quite small pieces and mix them with some vegetables when served. But she [LBC] only picks out the meat and never the vegetables. (paternal grandmother 6, LBC)

For the grandparent generation, meat was considered a special treat. This finding is consistent with Lora-Wainwright's observations in southern rural China (2007), which suggested that offering meat to household guests was proof of the value placed on the guests in question. Animal-source foods are important to children's growth and development, but access to them is still limited for poor families in the developing world (Neumann, Harris, & Rogers, 2002).

Financial remittances from migrant parents were described as an important economic resource for improving the diet of LBC who

were being cared for by grandparents. LBC whose parents sent little or no remittances tended to have limited access to meat, so that it appeared that a lack of remittances compromised the diversity of foodstuffs provided to some LBC. A paternal grandmother caring for a 12-year old boy and his younger sister said that she did not receive financial support from the LBC's migrant parents:

> He always complains that we have noodles all the time. What else do you expect me to cook for you? Your parents never send money back … I used to tell them [LBC and his younger sister], "You two poor things have to suffer now [as I have no money to buy you meat or other stuff]. You can eat whatever you want when you grow up and have the capacity to make your own money." (paternal grandmother 10)

In the above case, LBC had to 'suffer', as stated by their paternal grandmother, because she was unable to afford foodstuffs other than noodles. This may support the idea that some LBC who received no remittances from parents have limitations in their diets. An 11-year old boy and his little brother with congenital heart disease had migrant parents who earned a low income and rarely sent back remittances. Their maternal grandparents, aged over 80, were struggling to prevent the children from going hungry and as such, nutrition itself was not a priority:

> How can we care about the nutrition? We are trying our best not to end up being hungry. (maternal grandfather 1, LBC)

A left-behind boy wrote in his food diary that he ate bean sprouts for almost every meal during the period when he was asked to record his meals. His maternal grandmother further elaborated on this:

> The bean sprouts were from our own field. We harvested soy beans around one month ago. Some were left in the fields and grew to bean sprouts. We collected them and then cooked them for meals. (maternal grandmother 1, LBC)

According to maternal grandmother 1 and three other grandparents, their expectation of food was to avoid hunger and to meet basic survival needs (Table 3). They were more concerned about not having enough food for the children, rather than nutrition. This may be partly due to their poor financial status, and also influenced by their experiences of hunger during the Great Famine.

3.4. Parent generation

Amongst this generation, there was more diversity in food items than amongst the grandparent generation. Children's diaries showed that children who were cared for by the parent generation tended to have better protein intake including animal-source food, eggs and milk (Table 4). Five caregivers from the parent generation ($n = 11$) mentioned 'cooking different foods' and 'preparing different dishes' for children. Only one mother mentioned about the Great Famine when she was promoted by her elderly neighbour. The parent participants in our study were mostly in their 30s-and 40s and had not experienced the Great Famine. They tended to hold different attitudes towards starchy foods:

> In the past, people used to be alright with just eating wheat flour, but this is not the case for modern people. How can children nowadays eat food only made of wheat flour? By the way, almost half of the nutrients come from meals with vegetables, meat, or a mixture of both instead of staple foods. Eating only wheat flour is not sufficient at all. (uncle 1, LBC)

The maternal aunt of an 11-year-old left-behind boy whose parents had migrated for employment said that her family's finances were good, as her husband had secured a permanent job in the local coal mine industry. Despite receiving no remittances from the boy's migrant parents, she was still able to afford a variety of food for the boy and her own daughter:

> Sometimes I make dumplings and noodles mixed with meat. My husband usually goes fishing, so we do not need to buy fish. Sometimes I make deep-fried cakes with melted sugar in it. The cooking oil is allocated by my husband's company so the quality is quite good. They [LBC and his cousin] find the food and snacks from local markets not as tasty, so I make these foods on my own for them. (maternal aunt 1, LBC)

A varied diet does not always mean a balanced or nutritious diet. In the above case, for example, the maternal aunt made her children home-made snacks using deep-fried cooking methods by using cooking oils (and sugar), which has a high energy content, but very few nutrients. Frying generally implied more edible oils and cooking special foods (e.g., animal foods), which to some extent are related to purchasing power in China (Wang, Zhai, Du, & Popkin, 2008).

Like the grandparent generation, the parent generation frequently mentioned meat (mainly pork). Meat was seen as a sign of economic status by comparing access to it with peers in the same communities. Three mothers with LBC highlighted this fact, "we are not (financially) better off than other families …, how can we afford our children meat for three meals a day?" One neighbour in his 20s compared himself with two left-behind boys cared for by their paternal grandmother, who were only offered meat occasionally and claimed proudly that "my family eat meat every day because we are loaded (financially well-off)".

As a symbol of economic status, offering sufficient meat was described as essential for meeting children's nutritional needs. For instance, the mother of an eight-year old non-left behind girl said:

> I think we meet our children's nutritional needs as we often go to local restaurants compared to other families in this village and we provide as much meat as they [the children] want. (mother 8, non-LBC)

This particular household was financially better off than their village peers, since they were running 'a profitable vegetable greenhouse,' which allowed them to afford dining out at the local restaurants on a regular basis, and providing meat for their children. The mother interpreted what the children 'want' as their nutritional 'needs.' This may lead to offering children excessive amount of high-energy foods. The potential risk in this case was that some children were likely to over-consume meat because it was considered a sign of economic status, rather than part of a balanced diet. This may contribute to children's being overweight or in the long term, even obesity. However, none of the parent caregivers involved in our fieldwork showed any awareness of this. Chinese children in rural areas have been experiencing a dramatic shift in nutrition, from a traditional low-fat and high-carbohydrate diet to a high-fat/energy diet. This is especially true among children from relatively affluent families (Cui & Dibley, 2012). The prevalence of being overweight/obesity has increased among rural children in China (Lyu et al., 2013; Yu et al., 2012), which may be partly due to parents' attitudes about the symbolic representation of meat as a status symbol.

Furthermore, the parent generation was concerned about barriers to healthy eating in rural communities, including food safety and lack of access to fresh food (for example, fresh milk and

vegetables) for rural children, compared to urban children. Compared to the grandparent generation, the parent generation's beliefs about healthy eating extended beyond survival, but suggested higher expectations of food and a growing demand for food quality.

It should be noted that our fieldwork was conducted during the winter season, a time that is not optimal for rural people to cultivate vegetables on their own lands. Instead, they instead relied on local markets for supplies. One mother of two non-left-behind children, who herself used to migrate to cities for work, described the lack of variety regarding food choices in rural communities, compared to urban areas. She compared restricted food access for rural children to urban children, highlighting in particular 'fresh vegetables' and 'fresh milk':

> It is winter now. There are not many vegetables available from the local market as there are in the cities. The local market is not open every day. Sometimes I go there to buy enough fresh vegetables to last a few days. The problem is that they do not stay fresh for long. Urban kids have access to fresh vegetables all the time. They drink fresh milk every day, but rural kids don't. (mother 7, non-LBC)

The parent generation was concerned about food safety, which was described as a threat to healthy eating for rural children. However, none of the grandparent caregivers raised this issue during the open-ended conversations. Two mothers expressed their concerns about food safety in rural areas:

> We had food poisoning after eating frozen dumplings from the local market. We did not feel well after lunch. My two kids became very ill. We were sent to the central hospital in the city. After that, I no longer buy frozen dumplings from the local market. (mother 5, LBC)

> You see, although bean sprouts from the local market do not look as good as before the additives [added to bean sprouts to make them grow faster and look more tender] were banned by the law, they are safer to eat. This is what it is like to live in rural areas. We have to worry about food safety. (mother 7, non-LBC)

4. Discussion

The aim of this study was to explore caregivers' beliefs about healthy eating for LBC in rural China. Intergenerational differences in beliefs about healthy eating showed that where the grandparent generation tended to emphasise the importance of starchy foods for children's growth due to their own past experiences during the Great Famine, the parent generation paid more attention to protein-source foods including meat, eggs and milk. Parents were also more likely to offer their children more high-energy foods (for example, meat), which was emphasised as a sign of economic status, rather than as part of a balanced diet. These could imply that the parent generation may have a different, but not necessarily better understanding of healthy eating for children, compared to the grandparent generation. This is inconsistent with previous studies suggesting that grandparents who cared for LBC had poorer nutritional knowledge and attitudes than the children's parents (Tan et al., 2010), and that they may not be able to provide a proper diet for LBC (Ye & Pan, 2011).

Our findings suggested that financial remittances from migrant parents were described by grandparents as an important source for being able to include higher cost foodstuffs such as meat in LBC's diet. Some grandparents suggested lack of remittances from migrant parents limited food choices they could offer LBC. Our previous work found that left-behind boys were less likely to receive resources in the form of remittances from migrant parents in a society where sons were culturally more valued than daughters (Zhang, Chandola, Bécares, & Callery, 2015). This was because their parents migrated to save up for their sons' adult lives, rather than for the lives of their daughters. Limited financial remittances for left-behind boys may reduce their food choices, which might restrict their growth and development during the early course of their lives.

Another important finding of this study is how grandparents' past experience during the Great Famine influenced their expectations and concerns about food, as well as their beliefs about healthy eating for children. From the interviews conducted with grandparents, a prominent theme that emerged in our data was grandparents' past experiences about food availability during the Great Famine, which occurred from 1959 to 1961 (Ashton et al., 1984). Despite rapid socio-cultural and economic changes in China during the past few decades, the experience of food shortage in early life stages persisted. Evidence shows that individuals exposed to famine in early life are at increased risk of adverse health outcomes (e.g., obesity, type 2 diabetes and coronary heart disease) in later life, which could be partially explained by persistent unhealthy food preferences across their life course (Portella et al., 2012). This is partly supported by evidence that exposure to the Dutch Famine in early gestation is associated with increased energy intake due to a fat preference (Stein, Rundle, Wada, Goldbohm, & Lumey, 2009). On the other hand, early-life experiences can shape people's attitudes towards food and healthy eating, thus directly (through food served) and indirectly (through offering behavioural models) influencing the feeding practices of caregivers and eating habits of children (Cooke et al., 2004; Gibson et al., 1998). Therefore, the influence of people's early-life exposures to food shortage may be passed on to their offspring through generations. This has an important implication, because a substantial number of LBC who were left behind by their parent(s) and were cared for by their ageing grandparents in rural China due to its large-scale rural-to-urban migration (All-China Women's Federation, 2013). It is important to take into account caregivers' experiences and intergenerational effects when exploring LBC's health and well-being in rural China.

Several limitations were encountered in this study. The key concepts of 'healthy eating' and 'eating well' were self-defined by our participants. These terms may have different meanings due to individual experiences. It may also have been unrealistic to ask participants to quantify food intakes during interviews and to note them in diaries. Additionally, we only asked about food items that were normally consumed. We expected and found that income was a sensitive issue and most participants were reluctant to disclose their incomes. Therefore, we were unable to compare income differences between the parent and grandparent generations quantitatively. However, our interviewees did volunteer information and suggested that remittances from migrant parents which they identified were reported as an important financial source to improve LBC's food and diet. Reflexivity is essential in qualitative research and it encourages the researcher to be part of, rather than separate from, the research (Lipson, 1991). The first author initially approached the LBC through school channels, which may have left an impression that she was a friend of the school staff, thus imposing pressure on children to take part. On the other hand, as native Chinese, the first author shared the same cultural background with the participants. However, their personal experiences, preferences, as well as world views may have been different, which may have led to different interpretations of conversations (Suddaby, 2006). A qualitative study of this kind has some limitations in terms of its representativeness. The sample size was

sufficient to reach saturation (32 caregivers and 26 children aged 6–12 years) and it was not designed to be statistically representative of the community of caregivers for LBC.

Despite these limitations, our study tentatively suggests potential for two separate types of nutritional risks for children, especially LBC in rural China: LBC cared for by aged grandparents, who had experienced the Great Famine, were likely to suffer from malnutrition, especially in the case of children lacking remittances from their parents. Although the parent generation placed greater emphasis on protein-source foods, the risk was that they also tended to provide their children with excessive high-energy food. This may contribute to children being overweight or obesity in the long term when they grow up. These findings suggest that research on LBC's nutritional health in rural China can benefit from exploring the beliefs regarding healthy eating and expectations about food of caregivers. It is important to identify intergenerational differences in beliefs of healthy eating for children and expectations to inform development of educational programmes and other interventions specific to the parent and grandparent generations.

Acknowledgement

We are very grateful to all children and their caregivers who gave their time and patience to participate in this study. This work was supported by the Economic and Social Research Council (ESRC) Postgraduate Scholarship and ESRC Overseas Fieldwork funding.

References

All-China Women's Federation. (2008). *Research report on rural left-behind children in China*. Retrieved 13 April, 2013, from http://www.women.org.cn/allnews/02/1985.html.

All-China Women's Federation. (2013). *Research report on left-behind children and migrant children in China*. Retrieved 6 April, 2015, from http://acwf.people.com.cn/n/2013/0510/c99013-21437965.html.

Ashton, B., Hill, K., Piazza, A., & Zeitz, R. (1984). Famine in China, 1958-61. *Population and Development Review*, 613–645.

Bisogni, C. A., Jastran, M., Seligson, M., & Thompson, A. (2012). How people interpret healthy eating: contributions of qualitative research. *Journal of Nutrition Education and Behavior, 44*(4), 282–301.

Broome, M. E. (1999). Consent (assent) for research with pediatric patients. *Seminars in Oncology Nursing, 15*(2), 96–103.

Burnette, D., Sun, J., & Sun, F. (2013). A comparative review of grandparent care of children in the US and China. *Ageing International, 38*(1), 43–57.

Centres for Diseases Control and Prevention. (1997). Guidelines for school health programs to promote lifelong healthy eating. *Journal of School Health, 67*, 9–26.

Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative research* (1st ed.). London: Sage.

Cooke, L., Wardle, J., Gibson, E., Sapochnik, M., Sheiham, A., & Lawson, M. (2004). Demographic, familial and trait predictors of fruit and vegetable consumption by pre-school children. *Public Health Nutrition, 7*(02), 295–302.

Corbin, J., & Strauss, A. (2007). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (3rd ed.). Thousand Oaks Sage Publications.

Creswell, J. W. (2006). *Qualitative inquiry and research Design: Choosing among five approaches*. Thousand Oaks, CA: Sage Publications.

Cui, Z., & Dibley, M. J. (2012). Trends in dietary energy, fat, carbohydrate and protein intake in Chinese children and adolescents from 1991 to 2009. *British Journal of Nutrition, 108*(07), 1292–1299.

Deng, S. (2011). Adolescents' food preferences in china: do household living arrangements matter? *Social Work in Health Care, 50*(8), 625–638.

Docherty, S., & Sandelowski, M. (1999). Focus on qualitative methods: interviewing children. *Research in Nursing & Health, 22*(2), 177–185.

Gibson, E., Wardle, J., & Watts, C. (1998). Fruit and vegetable consumption, nutritional knowledge and beliefs in mothers and children. *Appetite, 31*(2), 205–228.

Hasenboehler, K., Munsch, S., Meyer, A. H., Kappler, C., & Vögele, C. (2009). Family structure, body mass index, and eating behavior. *International Journal of Eating Disorders, 42*(4), 332–338.

Jiang, J., Rosenqvist, U., Wang, H., Greiner, T., Lian, G., & Sarkadi, A. (2007). Influence of grandparents on eating behaviors of young children in Chinese three-generation families. *Appetite, 48*(3), 377–383.

Jing, J. (2000). *Feeding China's little emperors: Food, children, and social change*. Stanford University Press.

Kumanyika, S. K. (2008). Environmental influences on childhood obesity: ethnic and cultural influences in context. *Physiology & Behavior, 94*(1), 61–70.

Lipson, J. (1991). The use of self in ethnographic research. In J. M. Morse (Ed.), *Qualitative nursing research: A contemporary dialogue* (pp. 73–89). London: Sage.

Lora-Wainwright, A. (2007). BICC working papers. *'Do you eat meat everyday?' food, distinction and social change in contemproary rural China* (vol. 6). British Inter-University China Centre.

Lyu, Y., Ouyang, F., Ye, X., Zhang, J., Lee, S., & Li, Z. (2013). Trends in overweight and obesity among rural preschool children in southeast China from 1998 to 2005. *Public Health, 127*(12), 1082–1089.

Ma, S. (2010). China's "left behind" children often suffer health consequences [News] *CMAJ Canadian Medical Association Journal, 182*(16), E731–E732.

Morse, J. M. (1995). The significance of saturation. *Qualitative Health Research, 5*(2), 147–149.

National Bureau of Statistics of China. (2014). *Statistical Communiqué of the People's Republic of China on the 2013*. National Economic and Social Development. Retrieved 20 September, 2014, from http://www.stats.gov.cn/english/PressRelease/201402/t20140224_515103.html.

Neumann, C., Harris, D. M., & Rogers, L. M. (2002). Contribution of animal source foods in improving diet quality and function in children in the developing world. *Nutrition Research, 22*(1), 193–220.

Newman, J. M. (2004). *Food culture in China*. Greenwood Publishing Group.

Nicklas, T. A. (1995). Dietary studies of children and young adults (1973-1988): the Bogalusa heart Study. *The American Journal of the Medical Sciences, 310*(6), S109.

Nicklas, T., & Johnson, R. (2004). Position of the American Dietetic Association: dietary guidance for healthy children ages 2 to 11 years. *Journal of the American Dietetic Association, 104*(4), 660–677.

Peng, X. (1987). Demographic consequences of the great leap forward in China's provinces. *Population and Development Review*, 639–670.

Portella, A., Kajantie, E., Hovi, P., Desai, M., Ross, M., Goldani, M., et al. (2012). Effects of in utero conditions on adult feeding preferences. *Journal of Developmental Origins of Health and Disease, 3*(03), 140–152.

QSR.. (2012). *NVivo qualitative data analysis software. Version 10*. QSR International Pty Ltd.

Rich, J. (1968). *Interviewing children and adolescents*. New York: Macmillan.

Ritzer, G., & Goodman, D. J. (2003). *Sociological theory* (6th ed.). Boston, Mass.: McGraw-Hill Higher Eduction.

Shah, A., Zhang, Q., & Zou, H. (2005). *Regional disparities of educational attainment in China* (Paper presented at the CESifo economic studies, Conference on understanding the Chinese economy).

Smil, V. (1999). China's great famine: 40 years later. *Bmj, 319*(7225), 1619–1621.

Spratling, R., Coke, S., & Minick, P. (2012). Qualitative data collection with children. *Applied Nursing Research, 25*(1), 47–53.

Stein, A. D., Rundle, A., Wada, N., Goldbohm, R., & Lumey, L. (2009). Associations of gestational exposure to famine with energy balance and macronutrient density of the diet at age 58 years differ according to the reference population used. *The Journal of Nutrition, 139*(8), 1555–1561.

Suddaby, R. (2006). From the editors: what grounded theory is not. *Academy of Management Journal, 49*(4), 633–642.

Tan, C., Luo, J. Y., Zong, R., Fu, C. H., Zhang, L. L., Mou, J. S., et al. (2010). Nutrition knowledge, attitudes, behaviours and the influencing factors among non-parent caregivers of rural left-behind children under 7 years old in China. *Public Health Nutrition, 13*(10), 1663–1668. http://dx.doi.org/10.1017/s1368980010000078.

Taylor, J. P., Evers, S., & McKenna, M. (2005). Determinants of healthy eating in children and youth. *Canadian Journal of Public Health/Revue Canadienne de Sante Publique, 96*, S20–S26.

Tinson, J. (2009). *Conducting research with children and adolescents*. Goodfellow.

Wang, Z., Zhai, F., Du, S., & Popkin, B. (2008). Dynamic shifts in Chinese eating behaviors. *Asia Pacific Journal of Clinical Nutrition, 17*(1), 123–130.

Yarrow, L. J. (1960). *Handbook of research methods in child development*. New York: John Wisely.

Ye, J., & Pan, L. (2011). Differentiated childhoods: impacts of rural labor migration on left-behind children in China. *Journal of Peasant Studies, 38*(2), 355–377. http://dx.doi.org/10.1080/03066150.2011.559012.

Yongcheng Government. (2013). *Yongcheng Overview*. Retrieved 1 July, 2014, from http://www.ycs.gov.cn/Html/City/.

Yu, Z., Han, S., Chu, J., Xu, Z., Zhu, C., & Guo, X. (2012). Trends in overweight and obesity among children and adolescents in China from 1981 to 2010: a meta-analysis. *PloS One, 7*(12), e51949. http://dx.doi.org/10.1371/journal.pone.0051949.

Zhang, N., Chandola, T., Bécares, L., & Callery, P. (2015). *Intergenerational obligations: The paradox for left-behind boys by parental migration in rural China* (Working paper). (2015-01). from The University of Manchester http://www.cmist.manchester.ac.uk/research/publications/working-papers/2015/.